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## DOWNY PSYLLID OF ALDER, *PSYLLA FLOCCOSA*, NEW SPECIES.\*

BY EDITH M. PATCH, ORONO, MAINE.

The Psyllid under consideration has been conspicuous upon the alder (*Alnus incana*, Willd.) each season during my acquaintance with the vicinity of Orono, Maine. As the host-plant is looked upon as a common nuisance, no attention has been paid to this insect from an economic standpoint, and no further thought was given it except to admire the plummy appearance of the alder tips during June, or to be annoyed because it was impossible to go through this growth without being covered by the somewhat sticky flocculent matter.

This Psyllid was found to be convenient to use in connection with a study in wing venation,† but it was not until that paper was about ready for press that I tried to determine the species, and found that it was undescribed, for America at least. The Psyllid was named in that paper, and the description held until the present season should give opportunities for a few colour and life-history notes.

If the fact that I am not a "Psyllidist" is revealed by the generic characters creeping into the description, the accompanying photographs will perhaps help out the deficiency.

The eggs are probably deposited upon the alder in the fall, as the newly-hatched Psyllids appear about the time the alder leaves are unfolding in the spring, and settle upon the ventral surface of the leaves.

On June 10, 1909, nymphs previous to the last (or pupal) instar were examined. Head and thorax, both dorsal and ventral, were pale green, the abdomen, both dorsal and ventral, was pale yellow. Eyes bright pinkish-red. Tips of antennæ, legs and beak dusky. Wing-pads small and full and not flat upon the dorsum as in the next stage. These nymphs were congregated on young leaves on the ventral side along the ribs. To the naked eye they presented a loose, woolly mass on account

\*Papers from the Maine Agricultural Experiment Station: Entomology, 36.

†Homologies of the Wing-veins of Aphididæ, Psyllidæ, Aleurodidæ and Coccidæ.

of the white secretion. Under a lens the long wax filaments were seen to curl up in a slight curve from the body.

June 26, 1909.—The flat crab-like nymphs in the last or pupal instar are at this date full grown and ready for the transformation. The thin wing-pads lie flat upon the dorsum. Antennæ, legs, wing-pads and tip of abdomen are dark smoky. The general colour of head, thorax and abdomen is green. Antennæ with ten joints. Hind tibiæ and tarsi with spurs similar to those of the adults, but less pronounced. Length of body, 3.19 mm.

At this stage the nymphs are densely covered with a fluffy, silky flocculent mass, and look like walking ostrich-plumes. The ventral surface of the terminal leaves is by this time well filled with the white stuff, as well as the new growth of the twigs for four to six inches from the tip. A heavy storm dissipates this.

June 26, 1909.—The mature winged forms are present in great numbers on the ventral side of leaves, freshly emerged and not yet taken to flight. (Mature specimens dated July 26, 1905, and August 17, 1905, are in the Station collection.) The following colour descriptions are made from fresh material. Older specimens may not retain the same tints:

*Mature Form.*—Length of body of female, 4.2 mm.; male, 3.5 mm. Head, thorax, abdomen clear blue-green. Thoracic lobes and transverse portions of the abdominal segments are tinged with yellow, so that the Psyllid has a yellowish-green appearance. The ocelli are orange-yellow. Antennæ with ten segments; i-ii are pale green, iii-iv-v are whitish with discal joints black, remaining segments are black. The number of antennal joints is not constant, the segmentation varying even on the two sides of the same Psyllid. Ten seems to be the normal number. A single large round sensorium is present at the distal portion of iv, vi, viii and ix of both the male and female; x is tipped with two stout hairs.

Legs have femora green, tibia and tarsus whitish, with black claws. Tibial and tarsal spurs of hind leg black. At the base of the last pair of legs is a pair of prominent green spur-like projections extending caudad. The caudal tip of the abdomen is yellowish-brown.

Along the extreme distal tip of the hind tibia are seven sharp spurs. At the distal tip of the first tarsal joint are two similar spurs.

The wings are uniformly transparent, and are veined as is typical for the genus. All the veins except that of the claval suture are distinct in the fore wing. The veins in the hind wing are almost invisible. Length of fore wing, 5.35 mm.

## EXPLANATION OF PLATE.

*Psylla floccosa*, new species.

1. Fore wing.
2. Hind wing.
3. Genital segment of female.
- 4, 5, 6. Details of foregoing.
7. Genital segments of male.
- 8, 9, 10. Details of foregoing.
11. Front leg.
12. Second leg.
13. Showing ventral spur at base of third leg.
14. Third leg, showing tibial and tarsal spurs.
15. Head of male.
16. Head of female.
17. Nymphs in flocculent mass on terminal leaves of *Alnus incana*, June 10, 1909.

## NEW PSEUDOSCORPIONIDA.

BY NATHAN BANKS, EAST FALLS CHURCH, VA.

In the CANADIAN ENTOMOLOGIST for 1891, pp. 161-166, and 1893, pp. 64-67, I described a number of these small Arachnids, and in the Journ. N. Y. Ent. Soc., 1895, pp. 1-13, I presented a review of the forms then known from North America. Since then many specimens and species have been collected, and in these pages ten of the new forms are characterized, and a new genus erected for a form near *Garypus*.

*Chelifer fuscipes*, n. sp.—Cephalothorax and palpi dark brown, fingers more reddish, dorsum of abdomen brown, with a broad pale median stripe, legs brown, paler at tips of some of the joints. Cephalothorax subtriangular, minutely granulate, with a few short, nearly clavate hairs; eyes distinct. Palpi with fine short subclavate hairs, except on fingers, hand and outer side of the tibia, which are simple; trochanters with distinct tubercle behind, femora a little longer than cephalothorax, subpedicellate, largest at middle; tibiae about as long as femur, pedicellate, evenly convex both sides, but a little broader than femur; hand barely longer than tibiae, about twice as broad as femur, fingers shorter than hand, stout, curved. Dorsal abdominal scuta finely granulate, outer side very distinctly prolonged behind into acute spines.

Length, 1.8 mm.

From Claremont, Calif. (Baker).

September, 1909

*Chelifer persimilis*, n. sp.—This is extremely similar to *C. cancroides*. The male differs at once from *C. cancroides* by having the margins of the abdominal segments more strongly produced behind, and almost all of the segments are so produced (while in *C. cancroides* only a few of the basal segments are produced, and these not half as much). The palpus is similar to that of *C. cancroides*, but the tibia is more swollen on the inner margin, and the hand is heavier and the fingers slightly shorter and more curved. It is of the same size and coloration.

Specimens from Pecos, New Mexico (Cockerell); Las Vegas, New Mexico (Cockerell); Eagle Spring, Organ Mts., New Mexico, and Roswell, New Mexico, Aug. (Cockerell).

*Chelanops partitus*, n. sp.—Cephalothorax and palpi red-brown, former paler behind. Cephalothorax fully one and a-half times as long as broad; surface closely and minutely granulate, and with many short, clavate hairs. Trochanter strongly gibbouse behind; femur fully as long as width of the cephalothorax, slightly concave in front near the tip; tibia one and a-half times broader than the femur, evenly convex on outer side, inner side rather suddenly swollen and slightly tapering beyond; claw longer than the cephalothorax, hand about twice as broad as femur, hardly as long as tibia, tapering to the stout curved fingers, which are fully as long as hand; fingers with fine simple hairs, rest of palpus with short clavate hairs. Legs with short almost clavate hairs. Abdominal scutæ each with about eight clavate hairs on the posterior border.

Length, 3 to 3.5 mm.

From Pt. Yuma, Arizona. Related to *C. Arizonensis*, but not as darkly coloured, smaller, and the fingers are plainly longer than the hand.

*Chelanops diversus*, n. sp.—Cephalothorax dark brown, palpi dark red-brown, body and legs paler, scutæ brown, but the basal three are only brown near the middle. Cephalothorax barely longer than broad, densely granulate, with extremely short, almost clavate hairs; groove behind the middle, its ends curving forward. Palpi not as long as body, very heavy; femur rather broadest near base, as long as width of cephalothorax; tibia almost as long as femur, outer side evenly convex, inner side suddenly swollen and then nearly straight, barely broader than the femur; claw longer than cephalothorax and mandibles, hand very broad, about twice as broad as femur, broadest at base and tapering to the fingers, which are barely longer than width of hand, all with short fine hairs, those on femur and tibia almost clavate. Legs with short, simple hairs. Abdomen rather

elongate, with some clavate hairs on the sides, about eight on the hind border of each scutum.

Length, 2 to 2.2 mm.

From Lake Worth and Palm Beach, Florida.

*Garypus Californicus*, n. sp.—Cephalothorax dark brown, behind showing a pair of pale submedian spots, dorsal scutæ brownish, paler in middle, and each with a central dark brown dot; palpi yellowish, the hand more red-brown. Cephalothorax subtriangular, emarginate in front, fully as long as broad behind, with two large eyes close together, the hind one looking backward. Femur of palpus plainly longer than cephalothorax, but little widened apically, tibia much shorter, but plainly broader, scarcely convex on middle of inner side, claw large and long, the hand barely shorter than tibia, but nearly twice as wide, being convex on inner base, outer side slightly and evenly convex, fingers plainly longer than hand, strongly curved; all clothed with fine, short, simple hairs, some at base of fingers much longer; hairs on posterior margin of abdominal scutæ almost invisible. Legs long and slender, with fine, simple hairs; trochanters visible on legs iii and iv. Ventral scutæ also each with a central dark dot.

Length, 4.5 mm.

Two specimens from Palo Alto, Calif., and San Nicolas Island, Calif.

GARYOPS, n. gen.

In appearance similar to *Garypus*. The serrula attached to mandibles; the cephalothorax narrowed in front, and a pair of tuberosities each side, but no eyes on them. The femora of all legs show the trochantins distinctly separated, as plain in femur i as the others; no apparent transverse groove on cephalothorax; mandibles small, a distinct bifurcate stylet; coxæ of pedipalpi prolonged on median line in front. Dorsal scutæ of abdomen not plainly divided; coxæ i and ii do not meet on the middle line, and coxæ i barely touch each other at one point.

*Garyops depressa*, n. sp.—Pale yellowish, anterior part of cephalothorax and the palpi red-brown. Cephalothorax about two-thirds as wide in front as behind, constricted at anterior third, and here above is a black mark or slight tubercle, posterior border of cephalothorax prolonged to a median point, which indents the basal abdominal segments, its surface smooth. Palpi nearly as long as body, not very heavy, the trochanter large, with a prominent corner at base behind; femur about as long as cephalothorax, suddenly swollen, broadest at base; tibia shorter than the femur, not much swollen on inner side; claw longer than femur, hand

about as long as tibia, but little broader, broadest near base, fingers not near as long as hand, quite strongly curved, and darker than hand, all parts with fine simple hairs, about one-half the width of the joints, except some at the base of the fingers. Abdomen moderately broad, flat, the setæ not distinctly divided, but apparently some of the posterior ones are divided.

Length, 2.5 mm.

Punta Gorda, Florida (Mrs. A. T. Slosson).

*Ideobisium tibiale*, n. sp.—Cephalothorax and palpi red-brown, rest of body and legs pale. Cephalothorax a little longer than broad, rather broader behind than in front, surface smooth, with a few long bristles, anterior margin rather prominent in the middle, two eyes each side, about one-half their diameter apart; mandibles large, with a few long hairs, stylet slender, trifid at tip. Palpi quite long; trochanter nearly twice as long as broad, sides subparallel; femur plainly longer than the cephalothorax, enlarging from base to tip; tibia distinctly shorter than femur, long pedicellate, but one and a-fourth broader than femur, inner side but little swollen; hand as long as femur, not twice as broad as tibia, but little swollen, mostly on inner side, fingers plainly shorter than hand, stout and but little curved; all with long simple hairs. Abdomen not very elongate, scuta smooth, with a few simple hairs; femora i and ii divided, basal part longer than apical part; femora iii and iv showing trochantins distinct.

Length, 4.2 mm.

From Florissant, Colo., 8,000 feet.

*Ideobisium magnum*, n. sp.—Cephalothorax and palpi dark red-brown, dorsal scutæ brown, rest of body and legs pale. Cephalothorax smooth, about as broad as long, a rounded tubercle in middle of front margin, eyes large, less than one-half their diameter apart, a few pale spots each side on the posterior part of the cephalothorax; mandibles large, with a few long hairs, stylet slender, with an outer branch toward tip, the latter bifid. Trochanter of palpus concave behind; femur subpedicellate, hardly as long as the cephalothorax plus the mandibles, as broad at middle as at tip; tibia plainly shorter than femur, strongly pedicellate, inner side suddenly swollen and then straight; hand large, as long as tibia, and about twice as broad, tapering to the stout fingers, which are plainly a little shorter than the hand; all parts with fine simple hairs.



Dorsal scuta smooth, with a few simple hairs. Legs long, femora i and ii divided beyond middle, tibia iv longer than the cephalothorax.

Length, 6.5 mm.

From Mt. Shasta, Calif. (Lembert). It is our largest species.

*Olpium frontalis*, n. sp.—Pale yellowish-brown, palpi darker yellow-brown, rest of body and legs pale. Cephalothorax about one and a-fourth times as long as broad, more than twice as broad behind as in front, surface nearly smooth, with a few very short simple hairs, two distinct eyes each side touching each other. Mandibles small; stylet rather long, simple, and with an out-turned tip. Trochanter of palpus convex in front, concave behind; femur not as long as cephalothorax, broadest beyond middle, granulate in front; tibia plainly shorter than femur, but plainly broader, both sides rather evenly convex; claw large and heavy, hand about as long as femur and twice as broad, sides subparallel, but rather broadest near the base, fingers stout, two-thirds of length of hand; all with short simple hairs, except four long ones at base of fingers. Abdomen elongate; posterior scuta divided, with a few short simple hairs. Legs i and ii divided in middle, trochanters distinct on hind legs.

Length, 3.5 mm.

Las Vegas, N. Mex. (Cockerell).

*Obisium transversum*, n. sp.—Pale yellowish on the cephalothorax and palpi, rest of body and the legs paler. Cephalothorax one and a-half times as long as broad, surface smooth, slightly narrowed in front of eyes, the front margin slightly convex; behind the middle is a distinct transverse furrow, with its ends slightly curving forward, two distinct eyes each side; mandibles large, more than one-half as long as the cephalothorax, no stylet. Femur of palpus hardly as long as the cephalothorax, barely broader in the middle; tibia a little shorter than the femur, but broader, outer side near base is slightly concave, inner side rather suddenly swollen and then nearly straight; claw as long as cephalothorax plus mandibles, about twice as broad as femur, the hand very broad near base, tapering each side to the fingers, which are stout, slightly curved and as long as hand; all with fine simple hairs, many of them very long. Legs short, with simple hairs, anterior tips of coxæ i and ii with a distinct tooth. Abdomen (♀) about two and a half times as long as cephalothorax; the segments smooth.

Length, 2 mm.

From Pecos, New Mexico (Cockerell).

## THE EDWARDS COLLECTION OF BUTTERFLIES.\*

*The Editor of the Canadian Entomologist :*

DEAR SIR,—I have read with interest your account of the life of my deceased friend, Mr. William Henry Edwards, in the August number of the CANADIAN ENTOMOLOGIST. I detect on the last page an error. It is not of great importance, but you are incorrect in stating that Mr. Edwards's "extensive and valuable collections were purchased a few years ago by the Carnegie Institution at Pittsburgh and are now in the care of Dr. W. J. Holland, the Director." Long before the Carnegie Institute in Pittsburgh existed, or was even thought of, Mr. Edwards, being desirous of publishing the third volume of the "Butterflies of North America," but lacking the necessary funds, wrote me that he contemplated selling his collection, and intended offering it to the Trustees of the British Museum in the hope thereby of securing enough money to enable him to go on with his work. I wrote to him urging him not to do this, as in my judgment the types of his species should be preserved in America, and made him an offer to pay the bills for the publication of the third volume of the Butterflies of North America, as they became due, on condition that his collection should be turned over to me when he was through with the same and had completed his studies. This was done. I paid the bills for the drawing, lithographing, and printing of the plates and text of the third volume of "The Butterflies of North America," and finally received his entire collection, which forms a part to-day of my own private collection, which I have in recent years deposited in the Museum of the Carnegie Institute, desiring, while having it near by me, to make it available, with other collections, for purposes of study on the part of American students.

As I have intimated, the matter is not of burning importance, but your statement conveys an entirely erroneous impression of the transaction. I have always pleased myself with the thought that I was rendering a service to the cause of American science by retaining in this country Mr. Edwards's types, and I think I ought to have the credit for doing what I did, and that it should not be given to an institution which was not in existence at the time.

W. J. HOLLAND, Director Carnegie Museum.



## SOME RECENT CONTRIBUTIONS TO HEMIPTEROLOGY.

BY J. R. DE LA TORRE BUENO, WHITE PLAINS, N. Y.

(Continued from page 296.)

Prof. Montandon again lays the students of American Heteroptera under deep obligations by bringing down to December of last year the important and exclusively American Naucorid genus, *Ambrysus*, disposing it in an excellent synoptic table. The new species described are the following :

<i>Ambrysus Horvathi</i> , Mont.	—Perú.
<i>A. Colombicus</i> , Mont.	—Colombia.
<i>A. nitidulus</i> , Mont.	—Mexico.
<i>A. ochraceus</i> , Mont.	—Bolivia.
<i>A. Peruvianus</i> , Mont.	—Perú.

Hambleton's review of *Corizus* is most useful, and clears up the unfortunate chaos into which our American species had fallen. His table for the separation of species, complemented by his description of each, together with the excellent plates, showing several of the species and the distinctive characters of all, will enable anyone to readily identify his American material. The number of species is fixed at 12, of which those that occur in the Middle and New England States are named below together with their synonyms :

- Corizus crassicornis*, Linné.
- = *punctiventris*, Dallas.
- = *novaboracensis*, Signoret.
- C. lateralis*, Say.
- = *punctipennis*, Dallas.

This is our commonest eastern form, and, I suspect, furnishes the majority of records of other species, especially of *C. side*, which does not appear to have been recorded authentically from further north than Maryland.

- C. nigristernum*, Signoret.
- = *Bohemanni*, Signoret.

In the descriptions I miss other measurements in addition to the length and breadth, as well as the proportions of the antennal segments ; and also there is more attention paid to colour than would appear to me to be desirable in a genus so variable in this character.

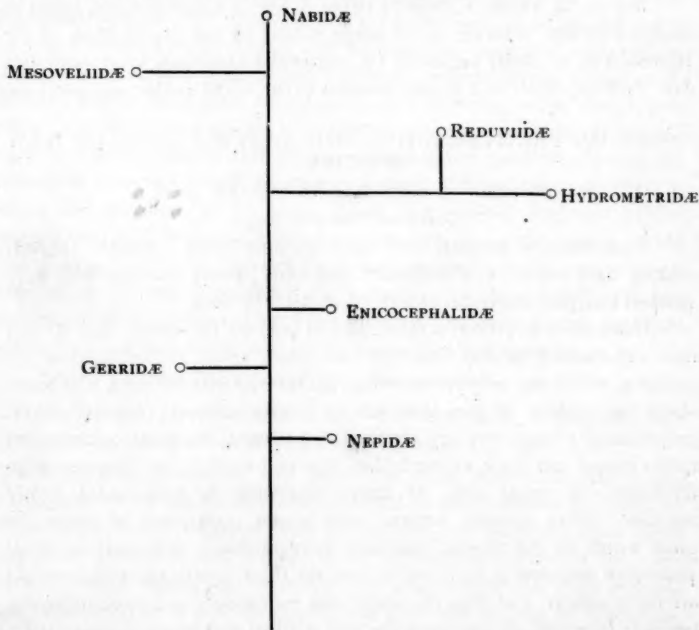
In the "Biological Notes," Kershaw and Kirkaldy give us brief life-histories of the Indian Pyrrhocorid bug, *Dindymus sanguineus*, and the

Lygæid, *Cænocoris marginatus*. These notes are of great interest, brief though they be, and the coloured plate is excellent. *Dindymus* is remarkable among Heteroptera, in having no less than *seven* moults and a somewhat long life-cycle, this being about 110 days. The plate shows the ovum, the first, fifth and eighth nymphal instars, and the adult. Contrary to the accepted idea of the food-habits of the Pyrrhocoridae, this species is carnivorous, and was fed on flies. The nymphs apparently prefer termites; the older nymphs, as well as the adults, feed on thin-shelled snails, other bugs, caterpillars, pupæ, etc.

The complete life-history of *Cænocoris* was not worked out. The bug is vegetarian, and its chief food-plant appears to be *Toxocarpus Wightianus*. The life-cycle took 53 days, but may be shorter in wet seasons. The plate gives two figures of the ovum, a couple of nymphal instars and a figure of the red recently-transformed adult hanging from a twig, and another of the black, fully coloured, mature adult.

The mooted question of the Hemipterous phylogeny is discussed by Kirkaldy, and he presents a family-tree, based on Schiödte's two main divisions. In a brief survey of the various recent attempts to classify the Order, he points out their deficiencies. His strictures appear to me well founded, and the objections he urges should be plainly evident to anyone who has a sufficiently extensive collection, or is at all familiar with the literature. Now, as to whether or not Kirkaldy's proposed classification will meet the exacting requirements of modern scientific research is a question to be solved by experience and a wider knowledge of Hemipterous metamorphoses and life-histories. I think there can be no question that the Heteroptera is one of the most ancient and most isolated groups of insects, of which the aquatic forms are the most highly specialized and furthest removed from the ancestral type. In the matter of the land forms, I confess my views are more in the nature of pious opinions, since thus far I have not studied them with the same minute attention that I have given to the aquatics, and therefore my interpretation of their relationships rests on the work of others. To me our Hemipterous groups do not appear as links in a chain or osculating circles, but rather as the ends of the twigs of the family-tree, vastly removed from the central stem, and still more from the root. Therefore, in the majority of instances, on our present knowledge, it is not possible to offer a phylogeny showing a direct line of descent. From this generalization, however, we must except four of the six families of Notonectoideæ. These are, in the order of their primitiveness, the *Acanthiidae* (*Saldidae* of authors), *Ochteridae* (*Pelagonidae* of

authors), *Naucoridae* (including *Nerthridae*, which has been joined to this family), and *Belostomatidae*. Here we have a series which, while the families are distinct, is nevertheless a direct one, in which the divergence between genera is not unbridgable. The two remaining families are obviously highly specialized, and differ as much between themselves as they do from the other four. On the other hand, I believe his arrangement of the *Nepoidea* is susceptible of advantageous modification. It appears to me evident that the *Hydrometridae* and *Mesoveliidae* are not subfamilies of the *Gerridae*, but are entitled to family rank. The true *Gerridae* are much older than either and spring from the main stem shortly after the *Nepidae*, while the *Hydrometridae* are more closely allied to the *Reduviidae* proper, and the *Mesoveliidae* to the *Nabidae*. In this respect I think Kirkaldy's tree should be modified thus :



The *Gerridae* are thoroughly and completely adapted for their semi-aquatic life; the *Hydrometridae* are in process of adaptation, and the

*Mesoveliidae* also, but not to as great a degree. I do not believe that the sericeousness of the underbody is necessarily an indication of adaptation to an aquatic or semiaquatic habitat, because we can see this in many land forms, especially among the *Lygæidæ* (of the older authors, not of Kirkaldy). Nor is ability to walk on the surface a sign of this peculiar fitness, because there are other forms, such as some *Diptera*, a few *Hemiptera* (*Heteroptera* and *Homoptera*), etc., which walk on the waters at a pinch, and this last is what *Mesovelia* does. Under compulsion it runs rapidly out upon the water from its habitual and customary haunts on floating vegetation (*Algæ*, *Duckweed*, etc.). *Hydrometra* also hugs the shore, and it does not appear to go any very great distance from land. Now, the true *Gerridæ* are bold navigators, and put out fearlessly upon the bosom of the deep, with which they are eminently fitted to cope.

But on the whole, Kirkaldy's paper is highly suggestive and ought to lead to a careful re-survey of the whole subject of the classification of the *Heteroptera*, so sadly neglected by competent observers, even unto this day. Nothing short of a drastic revision of the whole Order will avail us.

#### NOTES ON PACHYBRACHYS AND DESCRIPTIONS OF NEW SPECIES.

BY FRED. C. BOWDITCH, BROOKLINE, MASS.

(Continued from page 292.)

*Pachybrachys nubilus*, nov. sp.—Medium sized, cylinder shaped, shining, light yellow, with indistinct livid spots; finely punctate with well-marked elongate triangular shield. Length,  $2\frac{1}{2}$  mm.

Head convex, yellow, a faint tinge of livid on the vertex and a very fine well-marked central line and two small spots at the roots of the antennæ, which are yellow, becoming darker towards the end, and reach about the middle of the abdomen ( $\delta$ ), eyes distant; thorax yellow, proportionally long, very slightly narrowed towards the front, punctuation rather coarse and thick, antescutellar lobe well marked, the posterior edge thickened on either side, M faintly indicated in livid, sides lightly angulate; elytra parallel, yellow, with brown punctures; of about the same width as the thorax, standard spots diffusely indicated in livid, punctures confused in the scutellar area, the third, fourth and fifth intervals are fairly regular, and then the sixth and following are broken up to the two side intervals, all the costæ are well marked and nearly regular on the convexity; there is a well-marked elytral shield, triangularly elongated in the rear, and the rear portion forms part of a line of yellow spots which

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stretches across the elytra and which are smooth and as if planed down, marginal stria very lightly curved round the humerus and sinuate on the extreme edge, body below livid, with lighter epimera, abdominal sides and pygidium, legs yellow-brown, with clouds and spots on the thighs.

Two ♂'s, Bill Williams' Fork, Arizona; ♀, St. George, Utah. Type coll., Bowditch.

*Pachybrachys longus*, nov. sp.—Medium sized, elongate, slender, cylindrical, dull pale yellow, with brown punctures and striæ. Length, 3 mm.

Head yellow, front almost flat, thickly punctate, with dark median line and vertex, eyes close (for female), probably nearly approximate in ♂, which is wanting, antennæ thin, yellow, darker towards the tip, reaching middle of body (♀), thorax about one-half as long as elytra and nearly as long as wide, a little rounded and narrowed at front and rear, yellow, thickly covered with fine brown punctures, which have a tendency to thicken, where the M spots would come, and leave the sides free, lateral edge very finely subangulate and sinuate behind, transverse depression very moderate; elytra yellow with moderate brown punctures, which are diffuse on the anterior half, except for the third, fifth and humeral intervals, which are complete to the base, shield well marked, intervals behind smooth and well marked, tip smooth, marginal stria very lightly curved and sinuate, lobe broad and well developed, with a marginal row of punctures which do not go beyond the humerus anteriorly, below and legs yellow and livid, variegated, with the epimera, last segment and pygidium yellow, the last with three livid spots; fossa deep and rounded.

One ♀, Tucson, Arizona. Type coll., Bowditch.

*Pachybrachys proximus*, nov. sp.—Medium sized, cylindrical, pale yellow, with livid clouds and punctures. Length,  $2\frac{1}{2}$  mm.

Head with pubescent, and nearly flat front, punctured, with heavy frontal and vertex marks, the former divided so as to include the roots of the antennæ, which are quite dark throughout, but have the basal joints somewhat brown-red, and reach a little beyond the middle of the body, eyes distant (♂), thorax yellow, wider than long, narrowed at front and also a little at rear, in its greatest length not quite half as long as the elytra, thickly but unevenly, finely, livid-brown punctured, M diffusely indicated by the thickening of the punctures, which leave the edges more or less free, especially the sides and anterior angles, lateral edge subangulate and

well forward of the middle, transverse impression not well defined; elytra parallel, pale yellow, with moderate livid-brown punctures, which are diffused on the anterior half up to about the eighth interval, except that the third and fifth intervals are narrowly complete to the base and show a well-marked triangular shield, the rear and side is regularly striate punctate, the colour from the punctures more or less suffusing the intervals, the exterior standard spots also show faintly in livid, marginal stria lightly curved and barely sinuate, lobe well developed, with a strong row of marginal punctures, body below very dark brown, with the usual parts picked out in dark red, legs light reddish-yellow, with light ends to femurs and shanks.

One ♂, Leeds, Utah. Type coll., Bowditch.

As compared with *longus*, the thorax is more transverse and not as long, the eyes in *proximus* are much more distant and the antennæ and body below darker. The punctuation of the elytra is very similar.

*Pachybrachys truncatus*, nov. sp.—Small, pale yellow, moderately shiny, parallel, with livid marks and punctured striae. Length, 2-2½ mm.

Head convex, yellow, with livid marks on vertex, front and bases of antennæ; eyes distant, antennæ yellow, darker at ends, reaching about the middle of abdomen (♂), short in ♀; thorax yellow, hardly appreciably narrowed either front or rear, finely and moderately punctured, with M faintly indicated in livid (♂), much darker in ♀, depressed behind, with a well-marked antescutellar lobe, rear margin on each side thickened and raised, sides angulate in both sexes; elytra a trifle wider than the thorax and running parallel to the rear, yellow, with livid punctures and with the standard spots more or less developed in livid, in one ♂ the anterior inside spot is the best developed, in another ♂ the outside spots and the first inside are all traceable, and in the ♀ they are fairly well marked and much darker, and the rear ones are suffused into a transverse band; the punctuation is confused about the scutellum, while the third, fourth and fifth intervals are almost entire, those between the fifth and the two side intervals are broken; otherwise regularly punctate striate; elytral shield well marked and triangular; marginal stria very lightly curved round the humerus and slightly sinuate behind, lobe is feeble, with a row of fine punctures; below, ♂ yellow, with livid side-pieces and sides of abdomen, ♀ all dark livid, with light epimera and sides of abdomen, legs yellow, with occasional dark clouds.

Two ♂'s, Prescott; one ♀, Santa Rita Mts., Arizona. Type coll., Bowditch.



*Pachybrachys Nero*, nov. sp.—Same size and shape as *truncatus*, Bow., but dull whitish-yellow and nearly regularly punctate striate. Length,  $2\frac{1}{2}$  mm.

Head convex, yellow, with darker vertex, and central line and spots at the base of the antennæ, which reach about the middle of the abdomen ( $\delta$ ), eyes distant, thorax wider than long, gradually narrowed to the front, with a well-marked antescutellar lobe and with the posterior margin somewhat thickened, moderately and finely brown punctate, one specimen with a well-marked brown M, the other specimen with the M very faintly indicated, sides feebly angulate; elytra dull yellow, almost regularly punctate striate, the brown punctures slightly thicker and confused in the two short scutellar striæ, and showing a tendency to become biseriate in the anterior parts of the first four or five striæ, the sutural and third and fourth intervals from about the middle are much widened posteriorly and present the appearance of smooth, flat, longitudinal stripes; one of the specimens has a faint suspicion of one or more of the standard spots, but not prominent; marginal stria feebly rounded about the humerus, and in one specimen it might be called feebly subangulate, and barely sinuate behind, lobe moderate, with a row of fine marginal punctures, body below brown, with epimera, legs, sides of abdomen and pygidium yellow.

Two  $\delta$ 's, Prescott, Arizona. Type coll., Bowditch.

*Pachybrachys Sevier*, nov. sp.—Medium sized, shining dirty-yellow, almost regularly brown punctate striate. Length,  $1\frac{1}{2}$ – $2\frac{1}{2}$  mm.

Head yellow, front lightly convex, punctured, with dark spots at base of antennæ, faint frontal and vertex marks, antennæ darker, with light basal joints, barely one-half as long as body in  $\varphi$ , eyes very distant, thorax broader than long, shiny yellow, with rather large brown punctures diffused over its surface, M at most only very faintly indicated by clouds, transverse depression fairly well marked, lateral edge subangulate; elytra shiny yellow, regularly brown punctate striate, except that the scutellar area is confused, in one example there seems to be a tendency to have the third and fourth intervals widen at the convexity, marginal stria both lightly curved and sinuate behind, lobe fairly developed with a row of punctures, body below dull black, with the epimera, last segment and pygidium yellow, legs red-brown, with lighter bases to the femur; fossa shallow and dull.

One  $\varphi$ , Sevier Lake, Utah.  $\delta$  and  $\varphi$ , Green River City, Wyoming. Type coll., Bowditch.

*Pachybrachys levis*, nov. sp.—Small, or medium sized, cylindrical, semi-shining dirty-yellow, punctate striate, more or less clouded with brown on the standard spots, the shield well marked as a long smooth area. Length,  $2-2\frac{1}{2}$  mm.

Head yellow, convex, punctured, with dark, finely impressed median line and vertex, eyes distant in both sexes, antennæ red, growing dark towards the tip and reaching the second segment of abdomen in ♂, shorter in ♀; thorax narrowed in front, yellow, moderately and finely brown punctate, transverse impression moderate, M more or less indicated by brown clouds, lateral edge subangulate; elytra yellow, with striæ of brown punctures diffused in the scutellar area and broken in the sixth, seventh or eighth intervals back of the humerus; this break is sometimes quite slight; the ♂'s are much more inclined to regularity than the ♀'s, especially in the punctuation of the scutellar area, which in one example is almost regular, the elytral shield is shown as an elongate smooth raised third interval, running from about the middle down over the edge of the convexity. This is at times supplemented by a similar, though smaller space in the fourth interval. Some of the standard spots show at times as little splashes of brown, marginal stria lightly curved and sinuate behind, lobe well developed, with a small row of marginal punctures; body beneath black, with the epimera, sides of abdomen, last segment and pygidium yellow, legs yellow, with reddish clouds, fossa shallow, dull and triangular.

Three ♂'s, 2 ♀'s, Colorado Springs, Colorado. Type coll., Bowditch.

I also place here examples from Durango, Colorado; Taos County and Coolidge, New Mexico; Winslow, Arizona, and Reno, Nevada. They differ slightly, but all have the prominent smooth space on the third interval. The Coolidge, N. M., specimen has a well-marked M and thickly-punctate thorax.

*Pachybrachys Texanus*, nov. sp.—Very close to *eburifer*, Suff., and *nebulosus*, Suff., but readily separated by the nearly approximate eyes of the ♂; general colour yellow, with brown or livid markings. Head flat, closely punctured with livid central line and vertex, eyes of ♂ just visibly wider apart than the width of the livid central mark, those of the ♀ a little wider, about the same width as in ♂ of *similis*, nov. sp.; antennæ yellow at base, growing darker towards the tip, reaching about the middle of the body in ♂, not as long in ♀; thorax very finely brown-punctured, a little narrowed in front, sides in ♂ almost straight, ♀ just visibly sub-

angulate; colour yellow, with very broadly suffused M in livid-brown, caused by the crowded punctures, the central forked mark being much less sharply defined than in the preceding species; elytra the same general colour and shape as *similis*, but with the intervals behind the humerus less broken, and the fourth interval is, on the contrary, broken up with punctures. The elytral shield and livid markings are about the same in both species (one of my ♂'s has a specially-developed shield), marginal stria lightly curved at lobe and barely sinuate behind, lobe well developed, especially in ♀, and with a well-marked series of punctures on the curve; below dark brown or livid, with yellow epimera and sides of abdomen, legs pale, with darker clouds, pygidium as in *similis*.

Five ♂'s, 7 ♀'s, Brownsville, Texas. Length, 2-2¾ mm.

The main points of difference from *eburifer* are approximate eyes and shorter antennæ in ♂, and elytral striæ differently broken.

*Pachybrachys pusillus*, nov. sp.—Small, or medium size, dull dirty-yellow, elytra almost regularly punctate striate with a shield. Length, 2-2¾ mm.

Head yellow, front convex, punctured, the usual dark lines very faintly indicated in brown, eyes moderately distant in both sexes, antennæ yellow, the last five or six joints separately darkened at the ends, the tip reaching the abdomen in the ♂; thorax yellow, much wider than long, constricted at front and rear, more, however, at the former, so that from above the sides appear rounded, depression obvious, though not deep, surface rather unevenly but thickly punctured, M faintly indicated in livid, sides very feebly subangulate, especially in ♂; elytra yellow, almost regularly, very light brown, punctate striate, with an entire third interval, which shows a well-developed shield; the first short stria next the scutel is irregular; there is also a break in the sixth and seventh intervals behind the humerus; the curve of the marginal stria is very slight and almost straight behind, the lobe is wide, with a well-marked row of punctures; body below yellow, with the middle livid, legs yellow, fossa wide and dull.

♂ and ♀, Brownsville; 2 ♂'s, San Antonio, Texas. Type coll., Bowditch.

The 2 ♂'s from San Antonio are smaller, but do not differ otherwise from the Brownsville examples; specimens from Chihuahua, Mexico, are a trifle larger and more diffusely punctate around the scutel, and show traces of the standard spots in livid, and approximate to *nebulosus*, Suff.

*Pachybrachys puncticollis*, nov. sp.—Size small, pale yellowish-white, with red-brown markings, very noticeable by the coarse and crowded

punctuation of the thorax and front part of the body and the smooth, shiny, nearly impunctate rear. Length,  $2\frac{3}{4}$  mm.

Head convex, thickly and coarsely punctate, with central line, vertex, margins of eyes and spots at base of antennæ red-brown, eyes in ♀ rather close (♂ unknown), antennæ yellow, slightly darkened at tip, short and thin, reaching about the middle of body in ♀, thorax broader than long, much constricted at the front, yellow, with reddish clouds, the three most conspicuous being the bottoms of the standard M, the surface thickly and coarsely reddish punctured, with here and there towards the middle a few very small smooth yellow areas, depression behind well marked, but lobe before the scutellum small, sides angulate, very distinctly sinuate in the rear, where the angle is finely rectangular; elytra yellow, with reddish-brown marks, the principal one being a transverse band on the convexity, dilated forward at the suture to meet a broad V, the arms of which fall inside the humerus, the general effect being a brown cross; just anterior to the transverse band is a line of four conspicuous yellow spots, which nearly meet near the suture, another and smaller row coming from the humerus; there is also a rather prominent spot on each side and just back of the scutellum; the tip and roots of the intervals are also pale. The punctuation is confused in the scutellar area and backward to the convexity, the striae are close and crowded, and towards the base show a tendency to become irregular, the sixth and seventh intervals are broken just before the convexity, and the marginal is also irregular, the whole surface is somewhat shiny, but towards the convexity the punctuation becomes less marked, and the surface is as if varnished; the marginal stria is very broadly and lightly curved round the humerus and lightly sinuate behind the lobe, which is very inconspicuous and almost wholly occupied by a row of punctures, all below, red-brown, with paler legs, fossa of ♀ large, deep and round.

One ♀, Chihuahua, Mexico; ♂ unknown. Type coll., Bowditch.

A ♀ specimen from Oak Grove Canon, Arizona, in collection of Prof. Snow, I refer to this species. It is in very bad order, and differs by having the red colour more general and suffused, the punctuation is thicker and more irregular.

*Pachybrachys rotundicollis*, nov. sp.—Obscure (same colour as *pusillus*) dirty-yellow, striate with black or brown punctures and very black narrow sutural line; thorax of ♂ constricted at both ends, so that viewed from above the sides appear rounded. Length,  $3-3\frac{1}{2}$  mm.

Head yellow, convex, with rather coarse punctures and brown frontal line, and faint vertex mark, eyes distant in both sexes, antennæ yellow, growing darker towards the tip, strong and stout in ♂, and reaching about the middle of the abdomen, shorter and finer in ♀; thorax yellow, with scattered coarse brownish punctures, which are thickest where the M would be, transverse depression well marked, especially in the ♀, and with a strong brown depression before the scutel, the ♂ has the thorax constricted in front and behind, most strongly in front, so that the sides, viewed from above, appear almost regularly rounded; the ♀ has the front constricted but very little, narrowed behind, so that the round appearance does not show, sides swollen, lateral edge almost straight in ♂, subangulate in ♀, hind angles obtuse; elytra yellow, stout parallel, constricted behind the shoulders, with striæ of brown punctures, which are regular, except in the scutellar area, and a slight break behind the humerus; the punctures are notably distant, so that the striæ are very little impressed and the intervals flat, the suture is black, the beginnings of a shield are apparent, though not prominent, the marginal stria is moderately curved and sinuate behind the humerus, lobe well developed, especially in ♀, with a fine row of punctures, beneath black with epimera, last segment and sides of abdomen and pygidium yellow, legs yellow, with paler femoral ends, fossæ moderately deep and semi-dull.

Martin and Hamilton Counties, Kansas; Greely and La Junta, Colorado, Texas. Type coll., Bowditch.

*Pachybrachys atomus*, nov. sp.—Small, or medium sized, black, specked with yellow enamel, especially on the elytra. Length, 2-2½ mm.

Head with convex front, yellow, with the usual frontal and vertex marks, more suffused in ♀ than in ♂, very finely punctured, eyes equally distant in both sexes, antennæ long and stout, reaching beyond middle of abdomen in ♂, becoming flattened and therefore apparently thicker towards the end, thorax cylindrically narrowed towards the front, yellow, very finely, thickly and irregularly punctured, with broadly suffused M (the thickness of the M determining the punctuation), slightly depressed behind, sides lightly bowed in both sexes; elytra a little narrower than the thorax, black, covered with comparatively coarse punctures, which are confused over the whole surface; the third, fifth and ninth intervals are more or less plainly indicated, in the typical ♀ they are traceable throughout a good part of their length; a large proportion of the broken intervals over the elytra are raised in yellow enamelled spots, giving the species the appearance of black specked with yellow, of these spots the

most prominent is usually the shield, though some other spots towards the sides are of the same size, but not so prominent at the first glance; the marginal stria is very slightly curved around the humerus and lightly sinuate behind, the lobe is hardly noticeable, and almost wholly occupied by a row of punctures, body below black, legs yellow, with dark rings on the thighs and clouds on the shanks and tarsi.

Three ♂'s, 1 ♀, Douglas County, Kansas; Iowa City, Pennsylvania. Type coll., Bowditch.

In well-marked examples the general appearance is yellow, caused by the numerous raised yellow spots on the elytra; then specimens occur where the yellow areas are few, and it approaches close to *characteristicus*. In general appearance it resembles some forms of *bajulus*, Suff.

*Pachybrachys* <sup>*confusus*</sup> ~~*proximus*~~, nov. sp.—Medium sized, or rather large, stout, black, with yellow spotting, always with a small, round shield spot. Thorax very finely and elytra coarsely punctured. Length,  $2\frac{1}{2}$  mm.

Head convex, thickly punctured, entirely black, except for two triangular spots between the eyes, a large, rather irregular quadrate spot between the antennæ and the labrum yellow, eyes very distant, antennæ red at base, and becoming dark brown after about the middle, and reaching to or a trifle beyond the middle of the abdomen in the ♂, not so long in ♀; thorax more than half the length of the elytra, tubularly constricted in front, depressed behind and humped about the middle, finely and evenly punctured, black, except the anterior angles, margin narrowly, and a narrow median line to beyond the middle and a small spot on each side at the base yellow, the median line is smooth, antescutellar impression well marked, lateral edge just barely bowed in ♂, angulate in ♀, hind angles obtuse; elytra somewhat compressed behind the shoulders, yellow, with the exterior standard spots suffused so that the two anterior ones are wholly joined, and they connect on the margin with the posterior spot (which otherwise is free), the interior spots are confused together longitudinally, and also spread sideways back of the shoulders and before the convexity to meet the two anterior exterior spots, having a well-marked shield, the keel and spots off from it yellow; the tip and around the hind exterior standard spot is yellow, the punctuation is coarser than the thorax, and everywhere diffuse, even to the tips of the elytra, the third, fifth and humeral intervals are traceable for part of their length, the yellow area at the side is elevated in fragments of ridges, marginal stria very lightly curved at the humerus and almost straight behind, lobe small, black, with a yellow spot forward of the shoulder hump, body beneath black, with



faint spots on the pygidium, prosternum finely sulcate, legs black, brown at base, with white spots on the thighs and rings on the shanks.

One ♂, Natchez, Mississippi; ♀, Falls Church, Virginia, Type coll., Bowditch.

I have five ♀ specimens from various places, where the elytra are almost wholly yellow and a trifle more regular in costation and more broken up into elevated spots, but I think they are all the same species.

North Carolina, Georgia, Pennsylvania, Grand Bay, Alabama.

*Pachybrachys varians*, nov. sp.—Of the same size and general coloration as *femoratus*, Ol., yellow and black, often more yellow, and broader in shape and much more regularly punctate striate and with a well-marked shield, length  $2-2\frac{3}{4}$  mm.

Head yellow finely punctured, with heavy dark spots on vertex, central line and spots at base of antennæ, often all suffused together, eyes distant in both sexes, antennæ red brown, darker towards the end, reaching the middle of abdomen in ♂, thorax yellow finely punctate, M (typical ♂) usually heavy, strong and well marked and closely punctate, typical ♀ much yellower and M much more faintly marked, transverse depression and lobe in front of scutel, medium, the lateral edge is finely angulate, hind angles fine and obtuse. The elytra (typical ♂) are yellow with the standard spots much diffused, leaving the tip, a row of spots on the convexity, the shield, a row of spots round the humerus and others near the base and scutel yellow, almost regularly punctate striate, except for a slight disturbance round the scutel and a break in the sixth, seventh and eighth intervals back of the humerus, (typical ♀ is much yellower and shows much less suffusion of the standard spots, the rear ones showing as a band and the others very faint, the striation is not quite as regular as in the ♂), body below black more or less picked out with yellow in the usual places, legs yellow with dark rings on all, and light tip on the femora of two hind pairs. The above is what I term the typical form; from this it varies until almost the entire upper surface is yellow either with the standard dark marks very faintly shown in clouds or very distinctly marked in black, the larger ♀'s are quite wide and flat and look very differently from the typical ♂, the smaller and darker forms have a close superficial resemblance to *femoratus*, Ol., but that is never broad and stocky or so regularly punctate striate, nor is the shield ever as well developed; marginal stria very moderately curved and slightly sinuate (same as *femoratus*), lobe the same; below black with spotted sides of abdomen and pygidium.

Nine ♂'s, six ♀'s, Opelousas, La., Georgia.

Some small ♂'s resemble some examples of *bajulus*, Suff. Type coll., Bowditch.

*Pachybrachys croftus*, nov. sp.—Medium sized, variegated black and yellow, rather smooth and semi-shining, very similar in size and general appearance to *melanostictus*, Suff. Length,  $2-2\frac{3}{4}$  mm.

Head yellow, thickly, finely punctured with heavy frontal and vertex marks, eyes distant, antennæ dark red becoming black towards the end, stout and in the ♂ reaching nearly the tip of the abdomen, thorax yellow, somewhat narrowed in front, thickly and rather coarsely punctured, the M taking the form of three heavy black stripes, nearly separate, of which the middle one is entire to the rear margin and divided in front by a narrow median yellow line attaining about the middle, transverse depression well marked, lateral edge subangulate and sinuate behind; the punctuation, while to some extent avoiding the light portions of the thorax, is on the whole, even and thick; elytra yellow, semi-shining, brown punctate, striate, with fairly regular costæ on the rear convexity, the root of the third, most of the fifth and the two side intervals; the standard spots show more or less suffused, the rear ones having rather a tendency to form a band, marginal stria lightly curved and lightly sinuate behind, lobe well developed and mostly occupied with a row of large punctures, body below black with spots on the rear rings of the abdomen and pygidium, legs brown with dark rings and light tips to femora.

Cloudcroft, New Mexico, 15 examples. Type coll., Bowditch.

The extent to which the intervals show on the elytra varies somewhat and in one ♂ others than those mentioned above show, and some do not show as many, but all show about the same behind, the small and most regular ♂'s approach *similaris*, nov. sp., but are not as proportionately long and cylindrical as that form.

I have also 5 examples from the same locality which are almost entirely black and where the punctuation seems closer, but as the black parts of the ordinary forms are always the most punctured, a totally black variety might naturally look more punctured than the type, so I call them for the present identical.

*Pachybrachys levicollis*, nov. sp.—Size large, form rather broad, flat, elongate, shining, sparsely and finely punctured, especially on the thorax; black with pale thoracic margin and median line and a few specks of light on the elytra. Length,  $3\frac{1}{2}$  mm.

Head yellow with heavy black frontal and vertex marks, sparsely and finely punctate (except on the dark marks); eyes distant (antennae wanting); thorax much wider than long, narrowed in front, medium depression behind, black with pale frontal and side margins and median line reaching a little beyond the middle and a suspicion of colour on the rear margin; the surface shiny and very sparsely, finely punctate, especially on the disk, lateral edge just barely bowed; elytra elongate parallel, rather square behind, sparsely, finely and diffusely punctate, the punctures coarse at the side, here and there arranged in rows, but only at the side is there any suggestion of costate intervals and then short and poorly defined, colour shining black; with the forward inflexed edge to round the shoulder, the tip, a few spots laterally behind the shoulder, at the convexity and a few median sprinkles, yellow, marginal stria very lightly curved, lobe rather long drawn out with a row of punctures; body below black with the epimera and abdominal and pygidial spots yellow, legs yellow, the tibiae and tarsi more or less fuscous.

Two ♂'s, Grand Lake, Colorado.

Would be placed near *signatifrons*. Type coll., Bowditch.

I note the occurrence of *eburifer*, Suff., from Brownsville, Texas, also what is apparently *rubronotatus*, Jac., from Iowa and Illinois. Our examples are smaller than the Mexican example cited in Biolog. Supp., p. 137 (which is in my collection), and with less yellow on the thorax and more on the elytra, but the form and punctuation seem to me about the same; more specimens are needed from all localities. Mr. Blanchard has also from Globe, Arizona, a specimen which I call var. of *marmoratus*, Jac. It has the thoracic M very plain and the elytra pallid. Mr. Knaus has two others much darker, one from El Paso, Texas, and the other from Las Vegas, N. M.; the latter gentleman also has a specimen of *varicolor*, Suff., from Cloudfrost, N. M., and *bajulus*, Suff., from Lower California; the latter species I have also seen from Texas; also from Cloudfrost, an example of *hamatodes*, Suff. In my former paper (Ent. News) I refer to *striatus*, Lec., dark form as probably a new species. I put it as *nigricornis*, Say.; *characteristicus*, Suff., which is typically dirty white, occurs also almost entirely suffused with black; *Sonorensis*, Jac., is found in the Santa Rita mountains, Lundy and Truckee, California. It is dull, rather flattened above, and comes near *croftus*, n. sp., *brevicollis*, Lec., and *signatifrons*, Mann. A series of specimens occur in Southern

Arizona, which seem to me probably *immaculicollis*, Jac., yet they do not fully agree with my only Mexican example of that form; the Arizona examples are rather more regularly punctate-striate and have a small shield spot; the Mexican specimen has a very indifferent shield and the stria not very well marked.

### A NEW SPECIES OF ANISOTA.

BY H. H. BREHME, NEWARK, NEW JERSEY.

*Anisota Neomexicana*, n. sp.—Male:—Expanse, 50 mm. Head and body, ochreous-brown. Fore wings dark ochreous-brown, shaded slightly darker outside the extradiscal line. Extradiscal line faint, purplish-brown in colour, more distinct toward inner margin; begins on the costa near the apex and extends in an even outward and inward sweep three-fourths across the wing, then with another outward and inward curve reaches the inner margin about one-third the length of the inner margin from the anal angle. Discal spot white, large, round and conspicuous and surrounded with a dark ring. Hind wings purplish-red with brownish cast at base and at inner margin. Beneath, rather evenly purplish-red, but paler than upper surface of hind wings and with an ochreous cast at base of both wings and on costal area of fore wings. Discal spot of primaries feebly reflected.

Female:—Expanse, 64 mm. Head and body uniform ochreous. Fore wings very soft grayish-brown with a distinctly ochreous tinge. Extradiscal line faint and diffuse, pale purplish in colour, running in the same manner as in the male. Discal spot white, large and round. Ground colour of hind wings as in fore wings, but with a purplish tinge, especially centrally. A single broad, faint and diffuse line extends straight from the above outer angle on costa to a little below the centre of the inner margin. Beneath ground colour as above, without the ochreous tinge, but with a decidedly purplish cast throughout. Lines of upper surface very faintly reflected.

Habitat: Fort Wingate, New Mexico, June 29. Described from six males and ten females. Allied to *Anisota suprema*, Pack., but differs in the colour of the abdomen, which in *Neomexicana* is ochreous, not black as in *suprema*, and in the male by the hind wings being purple instead of black.

September, 1909

## A NEW STAPHYLINID GENUS FROM CALIFORNIA.

BY A. FENYES, PASADENA, CAL.

During a recent collecting trip, I came across about 40 specimens of a very odd-looking Staphylinid; the beetle was living in the nest of the common red and black ant, under boards in the back yard of the Gally Cottages in Nordhoff, California. I spent a whole morning in removing the boards and following the crowds of ants, and was rewarded, aside from the above-mentioned specimens, with another specimen of a new inquilinous Staphylinid, also belonging to Aleocharinæ subfamily. This unique specimen will have to be left unnamed until further material will allow the study of the mouth-parts.

This is the first time, to my knowledge, that guests of the common ant of our State have been found; possibly the aggressiveness of this ant has kept collectors from exploring the more hidden parts of the nests.

Following is the description of the new genus and the unique species belonging to the same:

## SYMBIOCHARA, gen. nov. (Subfamily Aleocharinæ).

Related to Apterionina, Wasm., and to Sceptobius, Shp.; more robust than the former, with larger elytra and shorter antennæ and legs; without sexual differences on antennæ or legs, differing in this respect from Sceptobius; body apterous.

Antennæ eleven-jointed, closely articulated from the third joint on; joints one and eleven long, robust, subequal; two and three obversely conical, longer than wide; four to ten gradually longer, the former transverse, the latter quadrate.

Head moderately large, transverse, rounded; eyes small, somewhat approximated to the oral parts.

Labrum not clearly visible, possibly obsolete; mandibles simple, pointed; mentum very transverse, feebly bisinuate at apex.

Inner lobe of the maxillæ membranaceous, corneous only narrowly along the outer margin, inner margin at apex with about six comb-like spines, towards the base with numerous hair-like spines; outer lobe almost entirely membranaceous, transparent, longer than the inner lobe, with delicate hair-like spinules at the apex.

Maxillary palpi four-jointed; joint three long, thick, cylindrical; four rather short, very thin.

Ligula seemingly very short, consisting only of two very small divergent lobes.

Labial palpi three-jointed, the joints subequal, gradually decreasing in thickness.

September, 1909

Middle coxæ narrowly separated.

Front tarsi four-jointed; joint one elongate, as long as two and three together; four as long as one.

Middle and hind tarsi five-jointed; joint one very long, longer than two to four together; five about as long as three and four together.

*Symbiochara lativentris*, n. sp.—Rather broad, moderately convex, gradually wider towards the abdominal apex.

Head castaneous, shining; prothorax darker castaneous, shining; elytra and abdomen castaneous-piceous, opaque; antennæ and legs yellow.

Antennæ moderate, a little longer than the head and prothorax together, almost imperceptibly incrassate towards apex; joint 1 long, thick, much longer than wide; 2 shorter than 3; 4-10 almost equally wide; 11 almost longer than 9 and 10 together.

Head almost as wide as the prothorax, a little narrower in front than behind; on the front vaguely impressed; almost invisibly, very sparsely punctate, very sparsely pubescent; eyes small, much shorter than the tempora; genæ not margined.

Prothorax narrower than the elytra, transverse, subquadrate, widest near the apex, sides hence subparallel, hind angles rounded; often broadly depressed on almost the entire disc, and with two round, subbasal impressions nearer to the sides than to each other; almost invisibly, very sparsely punctate, not very densely pubescent, with numerous stiff, short black hairs on the disc and the sides.

Elytra almost shorter, and at base about one-fifth wider, than the prothorax; sides divergent towards apex; together much wider than long; the sutural margin shorter than the lateral one; very finely and very densely punctate, with dense silky pubescence and with a few stiff black short hairs on the disc.

Abdomen oval, widest at about the sixth dorsal segment, where it is much wider than the elytra; segments not impressed transversely at the base; very finely and very densely punctate, with dense silky pubescence and a few stiff black short hairs on the segments and on the rather narrow margin.

Legs elongate, slender, all their parts elongate.

Length, 2.3 mm.

Nordhoff, Southern California.

This species was first discovered by the late G. R. Crotch. Several specimens are in the Hubbard and Schwarz collection.



## NOTES ON TENTHREDINOIDEA, WITH DESCRIPTIONS OF NEW SPECIES.

BY S. A. ROHWER, BOULDER, COLO.

## PAPER VI. — WESTERN MACROPHYÆ.

Through the kindness of Prof. C. F. Baker I have had the opportunity to study a number of species of Macrophyæ which were collected in California. All these are short (6 to 8 mm.), robust, and largely black. The clypeus in all of them is black, or the apex is pale, and in most of the specimens the clypeus is truncate. The antennæ are short, stout, the third joint is longer than the fourth, and the apical joint in some cases is very small. The venation is normal, the lanceolate cell has a short straight cross-vein. The scutellum is black or marked with yellow. In the following table I have incorporated a few species from the West, which I have not seen; some of these may not belong to this group, but from the descriptions it is impossible to tell. Until these species have been studied it is not desirable to go into details about the limits of this group. The species which are placed from descriptions are marked with a star:

- |  |                           |
|--|---------------------------|
| Females .....  | 1.                        |
| Males .....  | 9.                        |
| 1. Most of the dorsal abdominal segments with the apical margin pale.  | 2.                        |
| All of the dorsal abdominal segments black (the apical segment is sometimes pale) .....  | 6.                        |
| 2. Posterior coxæ entirely black; (venter black) ... <i>pluricinctella</i> , Roh.  |                           |
| The tips of the posterior coxæ always pale .....   | 3.                        |
| 3. Clypeus distinctly notched; (venter black) ... <i>melanostoma</i> , Roh.  |                           |
| Clypeus truncate or but slightly incurved .....  | 4.                        |
| 4. Venter black; (length, 7 mm.; spot on the scutellum and the upper side of the posterior legs white) ... <i>pluricincta</i> , Nort. *  |                           |
| Venter largely white .....   | 5.                        |
| 5. Posterior femora on the inside only black; no shining area behind the lateral ocellus; anterior margin of the clypeus pale; abdomen dorsally with distinct scattered punctures .....                          | <i>Doanei</i> , Roh.      |
| Posterior femora black on the inside and outside, pale above and beneath; a shining area to the side and behind each lateral ocellus; clypeus black; abdomen dorsally without distinct scattered punctures ..... | <i>multicincta</i> , Roh. |

6. Venter largely black ; (inside and outside of the hind femora at the base black) ..... *truncata*, Roh.  
Venter largely pale ..... 7.
7. Scutellum black ; "abdomen smooth and polished" ; posterior femora black .. ..... *annulipes*, Cress.\*  
Scutellum with a pale spot ; abdomen not polished ; posterior femora in part pale..... 8.
8. All the femora pale, with a black line above ..... *nigricornis*, Roh.  
All the femora black all the way around at the base. *Provancheri*, Roh.
9. Venter and the sides of the abdomen entirely black..... 10.  
Venter or the sides of the abdomen pale..... 13.
10. Coxæ entirely black..... 11.  
Coxæ pale beneath at the apex ..... 12.
11. Hypopygidium with a slightly-rounded notch at the apex ; (posterior legs pale above) ..... *Bakeri*, Roh.  
Hypopygidium not notched, rounded ..... *occidentalis*, Roh.
12. Sides of the dorsal abdominal segments with pale bands ; legs pale above, black beneath ..... *pluricincta*, Nort.\*  
Dorsal segments all black ; femora pale beneath..... *nigricornis*, Roh.
13. Scutellum in part pale..... 14.  
Scutellum entirely black ; (central part of the basal plates polished ; all the femora and the tibiæ with a black line above .. *Doanei*, Roh.
14. Posterior femora black, with a pale line above and beneath ; (stigma white at the base)..... *pluricincta*, Nort.\*  
Posterior femora at the base entirely black ; (sides of the abdominal segments pale ; stigma yellow, bordered with a black line)..... *albipes*, Prov.\*  
Posterior femora entirely pale beneath ; stigma black above and pale beneath ; the central part of the basal plates with distinct punctures)..... *truncata*, Roh.

*Macrophya Provancheri*, n. nom.

*Macrophya albipes*, *Prov.*, Nat. Can., XXII, p. 95, 1895, not *Tenthredo* (*Macrophya*) *albipes*, *Dahlb.*, *Conspect.*, *Tenth. Scandin.*, 1835, p. 12, n. 162.

It seems quite probable to me that Provancher had confused two species when he described *albipes*. The male does not seem to be the male of the female described. It differs in having the sides of the abdominal segments pale. In all the species of this group which I am familiar

with the male is coloured almost exactly like the female. A single female collected in the mountains near Claremont, Calif., by Prof. C. F. Baker, seems to be the female of this species. Provancher does not say that the coxæ are pale, but implies that they are; if this is the case, the female from California is not Provancher's species. The above-mentioned female may be briefly characterized as follows:

Clypeus truncate; the labrum not much exceeding the clypeus. The third antennal joint is as long as joints four and five. Lateral ocellar furrows present, but not strong, deepest a little behind the lateral ocelli, where they are shining. Orbital carina\* not very strong, in places wanting. All the lobes of the mesonotum punctured alike. The teeth of the claws about of equal length. Dorsal abdominal segments without large punctures, the apical segments finely punctured; the apex of the sheath obliquely truncate. Black; tegulæ, margin of the pronotum, spot on the scutellum, posterior margin of the basal plates, and the apical abdominal segment *yellowish-white*. Legs black; tips of the posterior coxæ beneath, trochanters, apices of the femora, tibiæ, except the apex (the anterior pair have a narrow black line above) and most of the tarsi *yellowish-white*. Wings hyaline, slightly yellowish, iridescent; venation black, stigma brownish.

The species here described may be taken as the type of *Provancheri*, and if different from Provancher's species, that species should be given a new name.

*Macrophya nigricornis*, n. sp.—Female: Length, 5.5 mm. Anterior margin of the clypeus truncate; labrum but slightly projecting, its apical margin slightly incurved. Supraclypeal fovea transverse and shining; middle fovea wanting, lateral ocellar furrows rather distinct, a distinct fovea behind each lateral ocellus; orbital carina evident. The third antennal joint not quite as long as joints 4 and 5. Mesonotum with rather scattered punctures; the punctures of the scutellum larger and somewhat more scattered; scutellar appendage shining, but finely granular. The inner claw-tooth shorter than the outer. Dorsal abdominal segments finely sculptured; the apical margin of the sheath obtuse, rounded. Black; some of the joints of the palpi, posterior margin of the pronotum, tegulæ, a spot on the scutellum, posterior margin of the basal plates, and the apical abdominal segment *whitish*. Legs whitish; bases of the coxæ

\*The orbital carina is the carina running along the posterior margin of the head, from the clypeus to the occiput.

(more broadly so above), a line on the femora above, a line on the four anterior tibiae and tarsi above, and the apex of the posterior tibiae (the posterior tarsi are wanting) *black*. Wings hyaline, iridescent; venation black, stigma with a narrow orange-coloured line.

Male: Length, 5 mm. The male differs from the female in having the antennae longer, the claws not nearly so deeply cleft; the scutellar appendage is not so granular; the scutellum is black, the trochanters and the posterior tibiae have a black line above. The stigma is brownish, and the posterior tarsi are black. The hypopygidium is rounded at the apex, not notched.

Type locality: Mountains near Claremont, California. A male and female collected by Prof. C. F. Baker. The female is in Baker's collection, the male is in the author's.

This species is near *Provancheri*, Roh., but the femora have a black line above (they are not black all the way around at the base).

*Macrophya occidentalis*, n. sp.—Male: Length, 5 mm. Clypeus rather short, the anterior margin incurved; the labrum about as long as the clypeus, its anterior margin incurved. Supraclypeal fovea transverse, shining; middle fovea linear, not well defined; lateral ocellar furrows deep and narrow to the ocelli, but below the ocelli they are very weak; orbital carina not strong. The third antennal joint is shorter than joints 4 and 5. The lateral lobes of the mesonotum are more densely punctured than the anterior one; the scutellum with larger, more scattered punctures; the scutellar appendage is opaque, perhaps it is granular; tarsal claws minutely cleft. Dorsal abdominal segments punctured and granular, but not coarsely so. Hypopygidium rounded at the apex, not notched. Black; narrow posterior margin of the pronotum, and the margin of the tegulae *whitish*. Legs black; four anterior femora (not to the base) and the tibiae, posterior femora above and beneath (not extending to the base), posterior tibiae, except at the apex, and the four anterior tarsi more or less *yellowish*. Wings hyaline, iridescent; venation dark brown, the lower part of the stigma pale.

Type locality: Claremont, California. One male, collected by Prof. C. F. Baker.

This species is related to *nigricornis*, Roh., but the labrum is about as long as the clypeus (in *nigricornis* it is much shorter), and the legs are different colour, as shown in the above table.

*Macrophya Bakeri*, n. sp.—Male: Length, 6 mm. Clypeus with a deep V-shaped notch at the apex, the lobes broad; labrum about as long as the clypeus, and notched like it. Supraclypeal fovea shining, not well defined; middle fovea wanting; lateral ocellar furrows deep and narrow to the ocelli, where they become broad and shallow; the orbital carina almost wanting. Antennæ stout, the third joint as long as joints 4 and 5; joints four and five narrowed at the base. All the lobes of the mesonotum with about the same sculpture; scutellum a little more sparsely than the mesonotum; the scutellum appendage roughened; tarsal claws about equal. Dorsal abdominal segments very finely sculptured, shining. Hypopygidium slightly but distinctly notched at the apex. Black; a white spot on the labrum; a narrow line on the pronotum and the tegulæ, and the posterior margin of the basal plates *yellowish*. Legs black; the four anterior legs from near the base of the femora beneath, the posterior femora and the tibiæ, except the base and apex, above yellow. Wings hyaline, iridescent; brown and black, the stigma pale brown.

Type locality: Claremont, California. One male, collected by Prof. C. F. Baker.

*Macrophya truncata*, n. sp.—Female: Length, 5 to 6 mm. Anterior margin of the clypeus truncate; the labrum not more than half as long as the clypeus, at the apex truncate. Supraclypeal fovea shining, not distinctly defined; middle fovea distinct, circular; lateral ocellar furrows distinct above the antennæ and near the ocelli, in the other places poorly defined; orbital carina not strong. The third antennal joint about as long as the 4 and 5 joints combined. The punctures of all the lobes of the mesonotum about the same; the punctures of the scutellum larger and more scattered; scutellar appendage punctured; the tarsal claws with teeth about equal. Dorsal abdominal segments with rather large distinct punctures, closer in some specimens than in others; sheath rounded at the apex, the lower margin somewhat oblique. Colour black; anterior margin of the clypeus cream-coloured; posterior margin of the pronotum, tegulæ, spot on the scutellum, a spot on the pleuræ, most of the basal plates, apical dorsal segments and most of the venter *yellow*. Legs yellow; coxæ (the posterior pair beneath pale), trochanters, base of the femora (broadly so above), tips of the tibiæ and most of the tarsi *black*. Wings hyaline, slightly dusky, iridescent; venation dark brown, lower part of the stigma pale brown.

Male: Length, 5.5 to 6 mm. The male differs from the female in the absence of the pale spot on the pleuræ, and the black of the femora is

more extended. The hypopygidium is rounded at the apex and entire. The male varies in size; the size of the pale spot on the scutellum also varies; the width of the yellow on the pronotum is not constant; the clypeus is sometimes all black; and the posterior tibiae sometimes have a narrow black line above.

Type locality: Claremont, California. Five males and eight females, collected by Prof. C. F. Baker.

This species is close to *annulipes*, Cress., but the venter, scutellum and tips of the posterior coxae beneath are yellowish; and the abdomen has distinct punctures—it is not “smooth and polished.”

*Macrophya Doanei* (Roh.)—*Labida Doanei*, Roh. (CAN. ENT., p. 91, March, 1909), in part.

The apical antennal joint is very small. The type was collected at Stanford University, California. I have seen three females collected by C. F. Baker at Claremont, California. Two of the females have a small pale spot on the scutellum. A male from Claremont, California, and a male from the mountains near Claremont, collected by C. F. Baker, differ from the female in having the bands on the dorsal abdominal segments interrupted in the middle. The hypopygidium is rounded at the apex and entire.

*Macrophya pluricinctella*, n. sp.—*Labidia Doanei*, Roh. (CAN. ENT., p. 91, March, 1909), in part.

Female: Length, 6 to 7 mm. Anterior margin of the clypeus very gently incurved; labrum fully as long as the clypeus, truncate at the apex. Superclypeal fovea almost wanting; middle fovea wanting; lateral ocellar furrows almost reduced to a fovea; orbital carina strong; head behind the ocelli more shining and more sparsely punctured than on the front. The third antennal joint as long as joints 4 and 5. All the lobes of the mesonotum closely punctured, the scutellum more sparsely so; scutellar appendage punctato-granular; the tarsal claws deeply cleft, the inner tooth somewhat the shorter. Abdomen very finely punctured, the sheath rather broader than usual, rounded at the apex. Black; posterior part of the pronotum, tegulae, scutellum (sometimes reduced to a small spot), edge of the basal plates and the posterior margin of all the dorsal abdominal segments (these lines are sometimes interrupted), *yellowish-white*. Legs black; the apical 5/6th of all the femora beneath, the entire tips of the femora, tibiae (the anterior pair have a black line above, and the posterior pair have a black ring at the apex), and the tarsi (more especially the



anterior ones), *yellow*. Wings hyaline, iridescent; the venation black; the stigma brown, the lower part paler.

Habitat: Palo Alto, California; Stanford University, California; Claremont, California (C. F. Baker).

This species is close to *pluricincta*, Nort., but the coxæ are entirely black, and the femora are darker.

*Macrophya multicincta*, n. sp.—Female: Length, 7 mm. Anterior margin of the clypeus truncate; labrum smooth, slightly notched at the apex, not as long as the clypeus. Supraclypeal fovea shining, not well defined; middle fovea sublinear, fairly well defined; lateral ocellar furrows distinct behind the ocelli and above the antennæ, in the other places almost wanting; a distinct furrow extends both forward and backward from the anterior ocellus; orbital carina rather faint; head behind the lateral ocelli shining and more sparsely punctured than on the front. The third antennal joint not quite as long as joints 4 and 5 combined. The sculpture of all the lobes of the mesonotum the same; the scutellum more sparsely punctured; the scutellar appendage granular; the tarsal claws deeply cleft, the teeth equal. Abdomen with some distinct, irregular punctures; sheath truncate. Colour black; posterior margin of the pronotum, tegulæ, a spot on the scutellum, most of the basal plates, line on the posterior margin of all the abdominal segments, and most of the venter *whitish*. Legs black; posterior coxæ beneath, posterior trochanters, the femora above and beneath (these lines do not always reach the bases of the femora), four anterior tibiæ, except a black ring at the apex beneath, posterior tibiæ in the middle, and the tarsi more or less, *whitish*. Wings hyaline, iridescent; venation brown, the stigma with a pale streak.

Type locality: Claremont, California. Three females, collected by Prof. C. F. Baker.

This species is closest to *pluricinctella* and *pluricincta*.

*Macrophya melanostoma*, n. sp.—Female: Length, 7.5 mm. Anterior margin of the clypeus with a V-shaped notch, the lobes broad and obtuse; labrum punctured with small punctures, the apex truncate, as long as the clypeus. Superclypeal fovea almost wanting; middle linear; lateral ocellar furrows distinct, deeper at the vertex and the antennæ; orbital carina almost wanting; head behind the lateral ocelli shining, but not so much so as in some of the preceding species; third antennal joint as long as joints 4 and 5. Sculpture of all the lobes of the mesonotum the same;

scutellum with larger and more scattered punctures; scutellar appendage granular; the tarsal claws have the inner tooth shorter and stouter. Abdomen finely sculptured, the sheath rounded below. Black; posterior margin of the pronotum, tegulae, a small spot on the scutellum, most of the posterior plates, narrow posterior margin of all the dorsal abdominal segments *yellowish*. Legs black; tips of the posterior coxae beneath, the apices of the femora (more broadly beneath), the anterior tibiae, except a black line above, the four posterior tibiae, except the apex (there is a small spot at the base of the intermediate tibiae), and the tarsi more or less, *yellow*. Wings hyaline, iridescent; venation black, stigma pale brown.

Type locality: Claremont, California. One female, collected by Prof. C. F. Baker.

This may be the female of *Bakeri*, but the colour is different, and as the males of the other species resemble the females very closely, I think it is best to give this form a name.

#### NOTES ON BEES.

BY T. D. A. COCKERELL, UNIVERSITY OF COLORADO.

*Anthophora occidentalis*, Cresson.—At Pecos, New Mexico, July 15, my wife found a male which had been captured and killed by a Thomisid spider, *Misumena vatia*. The spider was much smaller than the bee; cephalothorax and legs pale green, abdomen white, marked with pink.

*Dioxys aurifuscus* (Titus).—This very rare bee was found by Mr. E. Bethel in a nest of cottony tomentum, evidently made by a species of *Anthidium*, on which it must be parasitic. The *Anthidium* nests occur at Golden, Colorado, in amygdaloid cavities in the basalt, these cavities being "filled with crystals called zeolites," in the search for which the nests were discovered.

*Perdita salicis*, Ckll.—On July 3, 1908, Mr. S. A. Rohwer took three females at Rifle, Colorado; two have the abdomen unusually dark, like males. The species is new to Colorado.

*Tetralonia speciosa* (Cresson).—In Lee County, Texas, Mr. Birkmann has taken both sexes in numbers at flowers of *Scutellaria*, April 28 and 29. The male is *T. Gillettei*, Ckll., which falls as a synonym. Confusion arose from the wrong male being associated with *speciosa* in collections.

*Halictus similis*, Smith.—Owing to the discovery in America of various closely allied species of black *Halictus*, difficulty has arisen

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concerning the precise identity of *H. similis* and *H. discus* of Smith, the descriptions of which proved inadequate. I have just taken occasion to re-examine the types at the British Museum, and after very careful comparisons I conclude that *H. similis* is identical with the European *H. leucozonius*. With the type in my hand, I fail to appreciate the differences mentioned by Smith, or to discover any means of separating the two.

The following table separates the females of *H. similis* and *H. discus* from species which they closely resemble :

- |  |   |
|--|---|
| Area of metathorax large, with irregular raised wrinkles; mesothorax densely punctured (Japan).....  | <i>proximatus</i> , Sm.                             |
| Area of metathorax strongly longitudinally ridged.....   | 1.  |
| 1. Larger; mesothorax very shiny, with strong sparse punctures; scutellum with large punctures, but a large area on each side of middle impunctate; basal hair-bands conspicuous; hind spur with about four short triangular teeth ..... | <i>discus</i> , Sm.                                 |
| Smaller; mesothorax densely punctured.....   | 2.  |
| 2. "Disc of basal segment of abdomen shining and remotely punctured" (E. Saunders) .....   | <i>zonulus</i> , Sm.                                |
| Disc of basal segment of abdomen finely and closely punctured all over.....  | <i>leucozonius</i> , Schr. ( <i>similis</i> , Sm.). |

In the male, according to Mr. E. Saunders, the tarsi are entirely black in *H. zonulus*, while they have the basal joints pale in *H. leucozonius*.

#### ENTOMOLOGICAL SOCIETY OF ONTARIO.

The Entomological Society has held its regular fortnightly meetings during the College year. The first meeting of the fall term was held on October 21st, and the last meeting of the spring term on March 17th.

At all the meetings the student body was well represented, especially by the members of the senior years, many of whom gave most interesting and valuable papers on subjects pertaining to the investigational work they were carrying on for their Fourth-year Thesis, or to the work in Entomology at which they were employed during the summer vacation. The preparation of these papers was entered into with enthusiasm by the students, who were glad to avail themselves of the opportunity of placing the results of their labours before an appreciative audience. The practice obtained in preparing such papers and delivering them in an acceptable manner, is invaluable to the student of Entomology who desires to fit

himself for teaching or investigational work. Thus, the meetings of the Society are of great value to the College students, as well as to all the members. Throughout the entire year great interest was taken in the meetings by all the members, and the prospects of future meetings are bright, as the success of each year stimulates the members to greater efforts for the next.

Some idea of the instructive, comprehensive and highly scientific nature of the work undertaken by the members of the Society during the past year may be gained from the following list of papers read:

"The Sorghum Midge in Louisiana," by R. C. Treherne (4th-year student).

"A Classification of Muscoidean Flies," by W. R. Thompson (4th-year student).

"Rearing Pomace Flies," by E. W. Stafford (4th-year student).

"Suggestions for Field Inspection," by R. C. Treherne (4th-year student).

"Notes on Eriophyidae," by J. Tothill (3rd-year student).

"Memoir of the late Dr. Fletcher," by Dr. C. J. S. Bethune (Professor of Entomology).

"Some Notes on Mites," by T. D. Jarvis (Lecturer in Entomology).

"The Chalcidid Subfamily Encyrtinae," by Alfred Eastham (4th-year student).

"Remarks on the External Anatomy of Chalcids," by A. C. Baker (2nd-year student).

"The Genus *Tetranychus*," by R. C. Treherne.

"The Entomological Department at Macdonald College," by A. G. Cutler (4th-year student).

"Spiders," by Dr. C. J. S. Bethune.

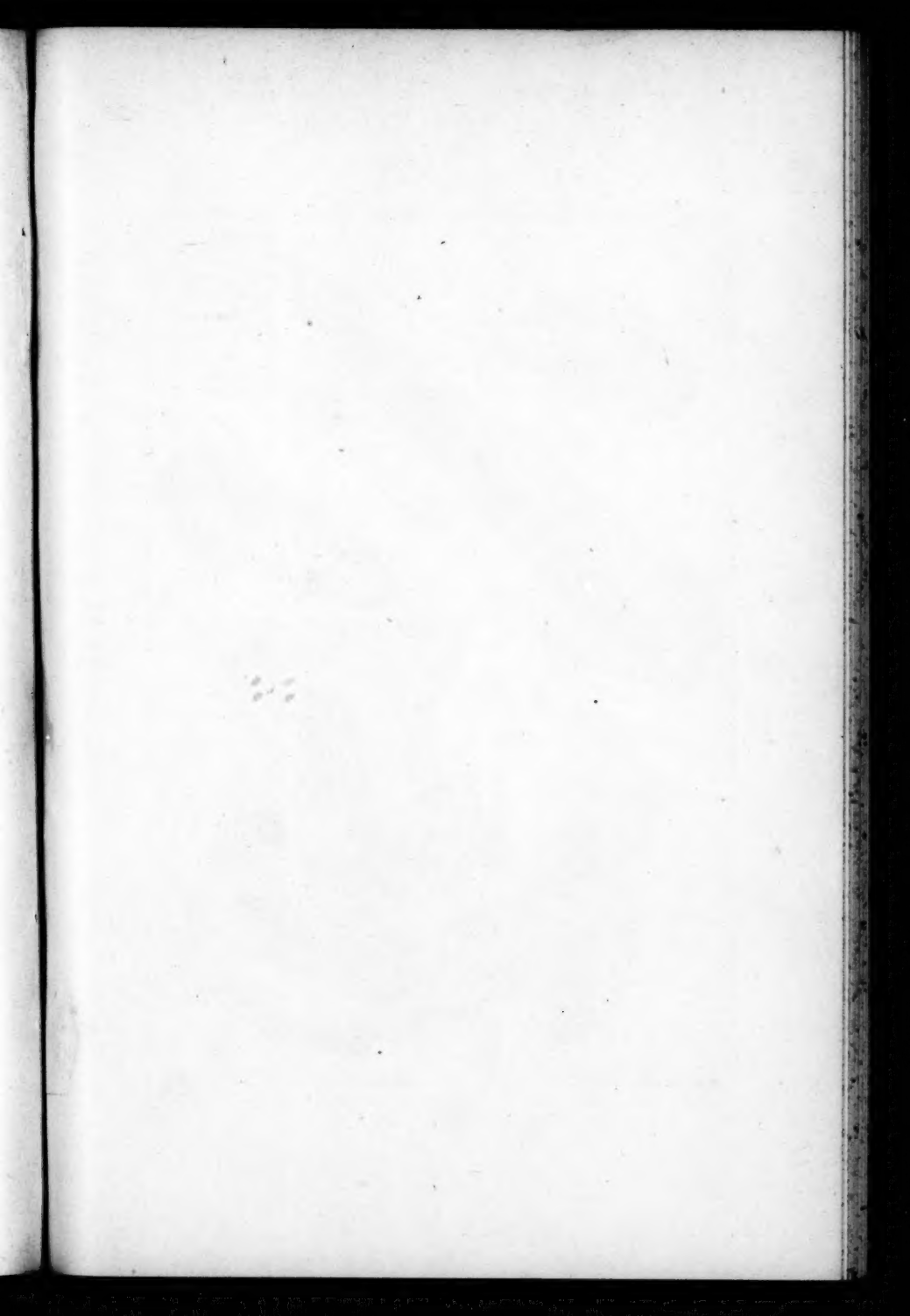
"Injurious Insects of the Season," by L. Caesar (Demonstrator in Entomology).

While all the above papers were of a high order of excellency, the systematic papers by Messrs. Thompson, Eastham, Baker and Tothill are especially worthy of commendation, as they were the outcome of original and thoroughly scientific investigations.

The "Memoir of the late Dr. Fletcher" was given by Dr. Bethune at the special request of the members of the Society, who felt that they would like to be brought into closer touch with the life of their much lamented President, by one who had been his co-worker and intimate friend for so many years. It is needless to say that their desire was fulfilled in a kindly and sympathetic manner.

J. E. HOWITT, Sec.-Treas.

Mailed September 15th, 1909.





STHENOPIS THULE.



